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ABSTRACT

This paper examines the use of telecommunications in rural schools in the United States as a solution to the problems teachers face when they have small classes, five or six class preparations daily, extracurricular duties, and inadequate training for specific classes. Telecommunications in schools in Minnesota and Kansas and a Star Schools Model in Texas are described in terms of planning, design, development, implementation and evaluation of the systems; the involvement of educators and private sector entrepreneurs, costs, governance, and policies; and the effects of these programs on teaching and learning. (ALF)

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Three Systems of Telecommunications in the United States

In the rural areas of Midwestern United States there continues to be the question of how to provide access to higher levels and different kinds of learning for all children. As farms become larger for owner operators or leasees there are fewer farm families with school age children. Average daily membership in rural schools is much less that a few years ago, making it difficult to maintain a variety of classes and programs. Teachers are required to teach a broad range of classes, mostly the minimum requirements. They have as many as five or six daily preparations; coaching is an additional responsibility. Often the instructor must attempt to teach classes for which he or she has neither license or educational preparation.

Telecommunications may be a way to solve this problem. To examine the use of telecommunications in Minnesota, Kansas, and a Star Schools model the following aspects will be considered: planning, design, development, implementation and evaluation of the systems; the involvement of educators and private sector entrepreneurs, costs, governance, and policies; and effects on teaching and learning.

USES

In the state of Minnesota telecommunications is used for the delivery of instruction to students in rural areas. Small districts cooperate in planning common courses and schedules.

Students participating in the class meet in their own school to view the program on a television monitor and interact with the teacher through both video and audio means. The teacher may be working with students from four or more districts with that number of monitors at his/her teaching station. Cambridge-Isanti is involved and is the fiscal agent for the districts of Braham, Milaca, Mora, Ogilvie, Pine City, and Princeton. A private cable television company, East Central Minnesota Cablevision, was the private sector partner when the cooperative was formed in the early 80s.

Interactive television is also used in suburban school districts in Minnesota if there are only a few students in each district who want a particular course. Social studies teachers in Edina provided classes for students in Richfield and St. Louis Park via the medium during the past decade.

Telecommunications is also used for community development in the state of Minnesota. Town meetings can be held in several districts with an expert panel broadcasting from one studio and responding to questions from viewers and listeners in other districts. The Commissioner of Education and local officials participated in a meeting in Eagle Bend on "The Future of Education" with viewers in three other locations, Clarissa, Bertha-Hewitt and Parker Prairie.

In Kansas all subject matter is delivered via telecommunication; a strong desire to maintain rural schools and rural values is the impetus. The commissioner of education believes "fiber optics will be widely used for the development of human capital."

In Kansas telecommunications will be used for the delivery of services to rural areas which then makes it an economic development tool. Collaborative efforts between educators and businesses makes this action possible.

In the Star Schools Project based in Texas over 600 hours of high school instruction is delivered to Star School sites. World languages include Japanese, Russian, German, French, Spanish and Latin. A wide array of science and mathematics including physics, chemistry, biology, algebra, geometry, trigonometry, and calculus are available.

Planning, Design, Development, Implementation and Evaluation of Systems

Planning in Minnesota was done by local districts, consortia of districts, and the private sector. The opportunity to do so was provided by the Minnesota Legislature when it offered incentives in the form of dollars. The department of administration was charged with the responsibility of an overall system of telecommunications throughout the state.

Planning in Kansas was done by the state department of education, the state board of education, the Kansas legislature, and consortia of districts.

In the Star Schools Project based in Texas the planning was done by local districts and universities and departments of education in North Carolina, Texas, Illinois, California, Alabama, and Mississippi.

For the design, development, and implementation Minnesota used cable television and interactive television with two-way audio and video either through satellite or fiber optics.

Kansas is using fiber optics with two audio and video interactive television. Plans are in process for significantly increased numbers of consortia.

The Star Schools Project based in Texas uses television via satellite with one-way video and two-way audio.

Evaluation showed Minnesota students learned as much as in conventional ways with a teacher in the classroom. Students learned more in situations where they had not had access to the courses.

In Kansas the use of interactive television for teaching and learning is too new for evaluation. The Star Schools' evaluation is similar to Minnesota's results.

Involvement of Educators and Private Sector Entrepreneurs

In Minnesota telecommunications projects were planned by educators in conjunction with the private sector. There was no interference by the private entrepreneur in the teaching and learning aspect.

Superintendents, the commissioner of education, and the commissioner of economic development worked with the private sector entrepreneurs in Kansas.

The Star Schools Project based in Texas was planned and carried out by educators. They contracted with private sector entrepreneurs.

A conflict to be resolved is the control of telecommunications. Should it be the cable companies or the telephone companies? The federal government may have to intervene to resolve this difficulty.

The Minnesota legislature passed a policy that every teacher will have a telephone in his or her classroom but also indicated that schools will pay a residential rate rather than the corporate rate. This is an example of intervention at the state level.

Costs, Governance, and Policies

In Minnesota the first major allocation of resources was over six million dollars in 1983. In subsequent years seven million dollars was allocated for statewide projects and lesser amounts to particular areas of the state. The money was earmarked for many

technology projects which included telecommunications. Some local district money and some private money was also provided.

Officials in Kansas received two million dollars from the Legislature which they believe will leverage six million dollars form economic development funds and the private sector.

The Star Schools Project located in Texas received 5.6 million federal dollars in 1988 and 4.2 million federal dollars in 1989. Matching funds were as high as 40%.

Governance of telecommunications in Minnesota and Kansas were by local districts or consortia of districts. The Star Schools consortia handled the governance for the project.

Policies in Minnesota were originally set by the legislature. They delegated setting of guidelines to the state board of education and an advisory group for department of education staff.

In Kansas policies were planned by the commissioner of education, the state board of education and members of the consortia.

Policies for Star Schools projects were originally set by the United States Congress and the federal department of education.

Effects on Teaching and Learning

In all three of the telecommunication projects teaching and learning were effected. When using telecommunications for delivery of instruction there was better planning and preparation by teachers. They tended to make greater use of visuals for all of their teaching. Teachers also had opportunities for

participation in inservice with experts when the inservice was offered via telecommunications.

The effect on learning was dramatic for students who had not had access to some subjects, particularly in advanced mathematics, sciences, and language or in advanced placement courses. Preparation for college was enhanced when the Star Schools Project located in Texas provided classes for students who were getting ready to take national tests for entry to college or university.

Students who take classes via telecommunications are highly motivated and give strong testimonials about their value.

Telecommunications has provided higher levels of learning and different kinds of learning for many students in the Midwestern United States. The potential for further uses of telecommunications is enormous.